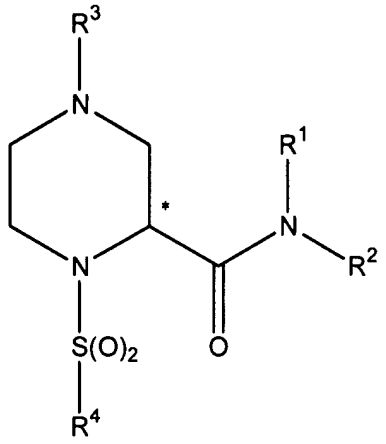
IN THE CLAIMS

1. (Original) A method for treating infertility in a mammal, comprising administering to a mammal suspected of infertility a therapeutically effective amount of a compound of Formula I:



I

wherein R^1 and R^2 are independently selected from the group comprising or consisting of hydrogen, C_1-C_{12}-alkyl, C_2-C_{12}-alkenyl, C_2-C_{12}-alkynyl, wherein said alkyl, alkenyl, alkynyl chains may be interrupted by a heteroatom selected from N, O or S, aryl, heteroaryl, saturated or unsaturated 3-8-membered cycloalkyl, heterocycloalkyl, wherein said cycloalkyl, heterocycloalkyl, aryl or heteroaryl groups may be fused with 1-2 further cycloalkyl, heterocycloalkyl, aryl or heteroaryl group, an acyl moiety, C_1-C_{12}-alkyl aryl, C_1-C_{12}-alkyl heteroaryl, C_2-C_{12}-alkenyl aryl, C_2-C_{12}-alkenyl heteroaryl, C_2-C_{12}-alkynyl aryl, C_2-C_{12}-alkynyl heteroaryl, C_1-C_{12}-alkyl cycloalkyl, C_1-C_{12}-alkyl heterocycloalkyl, C_2-C_{12}-alkenyl cycloalkyl, C_2-C_{12}-alkenyl heterocycloalkyl, C_2-C_{12}-alkynyl cycloalkyl, C_2-C_{12}-alkynyl heterocycloalkyl, alkoxycarbonyl, aminocarbonyl, C_1-C_{12}-alkyl carboxy, C_1-C_{12}-alkyl acyl, aryl acyl, heteroaryl acyl, C_3-C_8-(hetero)cycloalkyl acyl, C_1-C_{12}-alkyl acyloxy, C_1-C_{12}-alkyl alkoxy, C_1-C_{12}-alkyl alkoxycarbonyl, C_1-C_{12}-alkyl aminocarbonyl, C_1-C_{12}-alkyl acylamino, acylamino, C_1-C_{12}-alkyl ureido, C_1-C_{12}-alkyl carbamate, C_1-C_{12}-alkyl amino, C_1-C_{12}-alkyl ammonium, C_1-C_{12}-alkyl sulfonyloxy, C_1-C_{12}-alkyl sulfonyl, C_1-C_{12}-alkyl sulfinyl, C_1-C_{12}-alkyl sulfanyl, C_1-C_{12}-alkyl sulfonylamino, or C_1-C_{12}-alkyl aminosulfonyl;

R^3 is C_1-C_{16}-alkyl, C_2-C_{16}-alkenyl, C_2-C_{16}-alkynyl, wherein said alkyl, alkenyl, alkynyl chains may be interrupted by a heteroatom selected from N, O or S, aryl, heteroaryl, saturated or

unsaturated 3-8-membered cycloalkyl, heterocycloalkyl, wherein said cycloalkyl, heterocycloalkyl, aryl or heteroaryl groups may be fused with 1-2 further cycloalkyl, heterocycloalkyl, aryl or heteroaryl group, an acyl moiety, C_1-C_{16}-alkyl aryl, C_1-C_{16}-alkyl heteroaryl, C_2-C_{16}-alkenyl aryl, C_2-C_{16}-alkenyl heteroaryl, C_2-C_{16}-alkynyl aryl, C_2-C_{16}-alkynyl heteroaryl, C_1-C_{16}-alkyl cycloalkyl, C_1-C_{16}-alkyl heterocycloalkyl, C_2-C_{16}-alkenyl cycloalkyl, C_2-C_{16}-alkenyl heterocycloalkyl, C_2-C_{16}-alkynyl cycloalkyl, C_2-C_{16}-alkynyl heterocycloalkyl, alkoxycarbonyl, aminocarbonyl, C_1-C_{16}-alkyl carboxy, C_1-C_{16}-alkyl acyl, aryl acyl, heteroaryl acyl, C_3-C_8-(hetero)cycloalkyl acyl, C_1-C_{16}-alkyl acyloxy, C_1-C_{16}-alkyl alkoxy, C_1-C_{16}-alkyl alkoxycarbonyl, C_1-C_{16}-alkyl aminocarbonyl, C_1-C_{16}-alkyl acylamino, acylamino, C_1-C_{16}-alkyl ureido, C_1-C_{16}-alkyl carbamate, C_1-C_{16}-alkyl amino, C_1-C_{16}-alkyl ammonium, C_1-C_{16}-alkyl sulfonyloxy, C_1-C_{16}-alkyl sulfonyl, C_1-C_{16}-alkyl sulfinyl, C_1-C_{16}-alkyl sulfanyl, C_1-C_{16}-alkyl sulfonylamino, or C_1-C_{16}-alkyl aminosulfonyl;

R^4 is C_1-C_{12}-alkyl, C_2-C_{12}-alkenyl, C_2-C_{12}-alkynyl, wherein said alkyl, alkenyl, alkynyl chains may be interrupted by a heteroatom selected from N, O or S, aryl, heteroaryl, saturated or unsaturated 3-8-membered cycloalkyl, heterocycloalkyl, wherein said cycloalkyl, heterocycloalkyl, aryl or heteroaryl groups may be fused with 1-2 further cycloalkyl, heterocycloalkyl, aryl or heteroaryl group; and pharmaceutically acceptable salts thereof.

2. (Currently Amended) **The** **[[A]]** method **of** ~~**according to**~~ claim 1, wherein ~~**the compound of Formula I is such as**~~ R^1 is H.

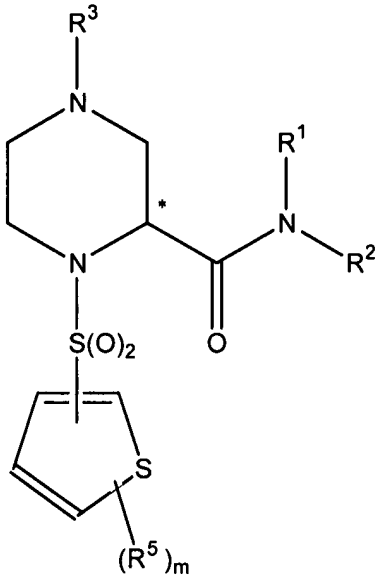
3. (Currently Amended) **The** **[[A]]** method **of claim 1** ~~**according to claims 1 or 2**~~, wherein ~~**the compound of Formula I is such as**~~ R^2 is selected from aryl, heteroaryl, 3-8 membered cycloalkyl and heterocycloalkyl.

4. (Currently Amended) **The** **[[A]]** method **of claim 1** ~~**according to any of the preceding claims**~~, wherein ~~**the compound of Formula I is such as**~~ R^4 is selected from C_1-C_6-alkyl, amino, aryl, heteroaryl, 3-8-membered cycloalkyl and heterocycloalkyl.

5. (Currently Amended) **The** **[[A]]** method of treatment **of claim 1** ~~**according to any of the preceding claims**~~, wherein ~~**the compound of Formula I is such as**~~ R^1 is H; R^2 is aryl; R^3

is selected from C_1-C_8-alkyl, C_1-C_8-acyl amino and C_1-C_8-alkyl acyl and R^4 is selected from C_1-C_6-alkyl, amino, aryl and heteroaryl.

6. (Currently Amended) **The [[A]]** method of claim 1 wherein the compound has the following Formula II:



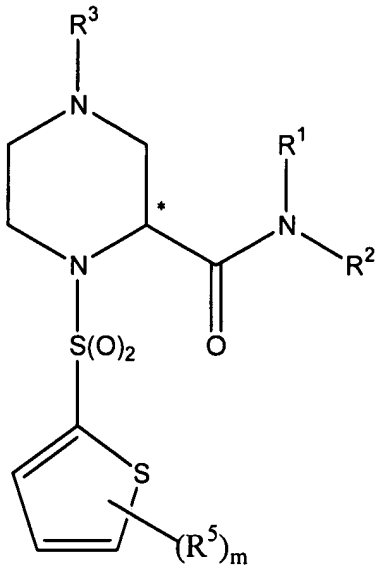
II

wherein ~~R^1, R^2 and R^3 are the same as defined above in Formula I;~~

~~each~~ R^5 is independently halogen, hydroxy or the same as defined for R^1;

m is an integer of from 0 to 4; and pharmaceutically acceptable salts thereof.

7. (Currently Amended) **The [[A]]** method of claim 1 wherein the compound has the following Formula III:



III

wherein ~~R^1, R^2 and R^3 are each the same as defined above in Formula I; each~~ R^5 is independently halogen, hydroxy or the same as defined for R^1; m is an integer of from 0 to 4; and pharmaceutically acceptable salts thereof.

8. (Currently Amended) **The** [[A]] method **of claim 7** ~~according to any of the preceding claims~~ wherein R^1 is hydrogen and R^2 is other than hydrogen.

9. (Currently Amended) **The** [[A]] method **of claim 7** ~~according to any of the preceding claims~~ wherein R^2 is aryl or heteroaryl.

10. (Currently Amended) **The** [[A]] method **of claim 7** ~~according to any of the preceding claims~~ wherein R^3 is **an n-alkyl group** ~~alkyl having five or more carbon atoms~~.

11. (Currently Amended) **The** [[A]] method of claim 10 wherein R^3 is an-~~n-alkyl group~~ **alkyl having five or more carbon atoms**.

12. (Currently Amended) **The** [[A]] method of claim 1 wherein R^4 is optionally substituted alkyl, aryl**, or** heteroaryl.

13. (Currently Amended) **The** [[A]] method of **claim 1** ~~any one of claims 1 through 12~~ wherein R^2 comprises a carbazolyl, tetrahydro-beta-carbolinyl or benzimidazolyl moiety.

14. (Currently Amended) **The** **[[A]]** method **of claim 1** ~~according to any of the preceding claims~~ wherein the compound of formula I is selected from the following group:

4-hexyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridinyl-3-yl-1H-benzoimidazol-5-yl)-amide);

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)amide]-1-pentylamide;

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxylic acid 1-ethylamide 3-[(9-ethyl-9H-carbazol-3-yl)amide];

{[3-(9-ethyl-9H-carbazol-3-ylcarbamoyl)-4-(thiophene-2-sulfonyl)-piperazine-1-carbonyl]-amino}acetic acid ethyl ester;

4-pentanoyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (9-ethyl-9H-carbazol-3-yl) amide;

4-hexyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (9-ethyl-9H-carbazol-3-yl) amide;

4-dimethylsulfamoyl-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)amide] 1-pentylamide;

4-(1-methyl-1H-imidazole-4-sulfonyl)-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)-amide] 1-pentylamide;

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxyclic acid 1-pentylamide 3-[(3-pyridin-4-yl-phenyl)-amide];

4-(thiophene-2-sulfonyl)-piperzine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)-amide] 1-{[2-(1H-imidazol-4-yl)-ethyl]-amide};

4-hexyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-oxo-2,3,4,9-tetrahydro-1H-beta-carbolin-6-yl)-amide;

4-heptyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl)-amide;

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)-amide] 1-[(3-imidazol-1-yl-propyl)-amide]);

4-pentyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-oxo-2,3,4,9-tetrahydro-1H-beta-carbolin-6-yl)amide;

4-heptyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-oxo-2,3,4,9-tetrahydro-1H-beta-carbolin-6-yl)amide;

4-(3-methylsulfanyl-propyl)-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (9-ethyl-9H-carbazol-3-yl)-amide;

4-(4-ethyl-furan-3-ylmethyl)-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (9-ethyl-9H-carbazol-3-yl)-amide;

3-(9-ethyl-9H-carbazol-3-ylcarbamoyl)-4-(thiophene-2-sulfonyl)-piperazin-1-yl] acetic acid ethyl ester;

1-benzenesulfonyl-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

4-pentyl-1-thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

4-hexyl-1-thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

1-(4-fluoro-benzenesulfonyl)-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

1-(2-fluoro-benzenesulfonyl)-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

4-octyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-4-yl-1H-benzoimidazol-5-yl) amide;

4-heptyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-4-yl-1H-benzoimidazol-5-yl) amide;

1-dimethylsulfamoyl-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

1-(butane-1-sulfonyl)-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

4-hexyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-4-yl-1H-benzoimidazol-5-yl) amide;

4-(3-methylsulfanyl-propyl)-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-4-yl-1H-benzoimidazol-5-yl) amide;

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)-amide] 1-[(2-methoxy-ethyl)-amide];

4-octyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide; and pharmaceutically acceptable salts thereof.

15. (Currently Amended) A method for treatment of a subject suffering from or susceptible to a disease or disorder associated with phosphodiesterase PDE4, adenosine transporters, or prostanoid receptors, comprising administering to the mammal a therapeutically effective amount of a compound of **claim 1** ~~any one of claims 1 to 14~~.

16. (Currently Amended) **The** [[A]] method of ~~any one of claims 1 through~~ **claim** 15 wherein the mammal is a human.

17. (Currently Amended) **The** [[A]] method of ~~any one of claims 1 through~~ **claim** 16 wherein the mammal is a female.

18. (Currently Amended) **The** [[A]] method of claim 17 wherein the mammal is suffering from an ovulatory disorder.

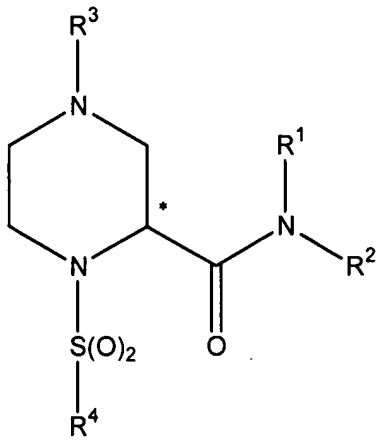
19. (Currently Amended) **The** [[A]] method of claim 17 wherein the mammal is being treated with an assisted reproduction procedure.

20. (Currently Amended) **The** [[A]] method of claim 17 wherein the mammal is undergoing in-vitro fertilization.

21. (Currently Amended) **The** [[A]] method of ~~any one of claims 1 through~~ **claim** 16 wherein the mammal is a male.

22. (Currently Amended) **The** [[A]] method of ~~any one of claims~~ **claim** 17 wherein the mammal is a male suffering from a spermatogenesis disorder.

23. (Original) A compound according to Formula I:



I

wherein R^1 is H;

R^2 is selected from aryl, heteriaryl, 3-8-membered cycloalkyl and heterocycloalkyl;

R^3 is selected from C_1-C_{16}-alkyl, C_2-C_{16}-alkenyl, C_2-C_{16}-alkynyl, monocyclic aryl, monocyclic heteroaryl, 3-8-membered monocyclic cycloalkyl, monocyclic heterocycloalkyl, acyl, C_1-C_{16}-alkyl aryl, C_1-C_{16}-alkyl heteroaryl, C_2-C_{16}-alkenyl aryl, C_2-C_{16}-alkenyl heteroaryl, C_2-C_{16}-alkynyl aryl, C_2-C_{16}-alkynyl heteroaryl, C_1-C_{16}-alkyl cycloalkyl, C_1-C_{16}-alkyl heterocycloalkyl, C_2-C_{16}-alkenyl cycloalkyl, C_2-C_{16}-alkenyl heterocycloalkyl, C_2-C_{16}-alkynyl cycloalkyl, C_2-C_{16}-alkynyl heterocycloalkyl, alkoxycarbonyl, aminocarbonyl, C_1-C_{16}-alkyl carboxy, C_1-C_{16}-alkyl acyl, aryl acyl, heteroaryl acyl, C_3-C_8-(hetero)cycloalkyl acyl, C_1-C_{16}-alkyl acyloxy, C_1-C_{16}-alkyl alkoxy, C_1-C_{16}-alkyl alkoxycarbonyl, C_1-C_{16}-alkyl aminocarbonyl, C_1-C_{16}-alkyl acylamino, acylamino, C_1-C_{16}-alkyl sulfinyl, C_1-C_{16}-alkyl sulfanyl, C_1-C_{16}-alkyl ureido, C_1-C_{16}-alkyl carbamate, C_1-C_{16}-alkyl amino, C_1-C_{16}-alkyl ammonium;

R^4 is selected from C_1-C_{12}-alkyl, C_2-C_{12}-alkenyl, C_2-C_{12}-alkynyl, aryl, heteroaryl, 3-8-membered cycloalkyl, heterocycloalkyl, and amino acid; and pharmaceutically acceptable salts thereof.

24. (Currently Amended) **The [[A]]** compound **of ~~according to~~** claim 23 wherein R^2 is selected from aryl, heteroaryl, 3-8 membered cycloalkyl and heterocycloalkyl.

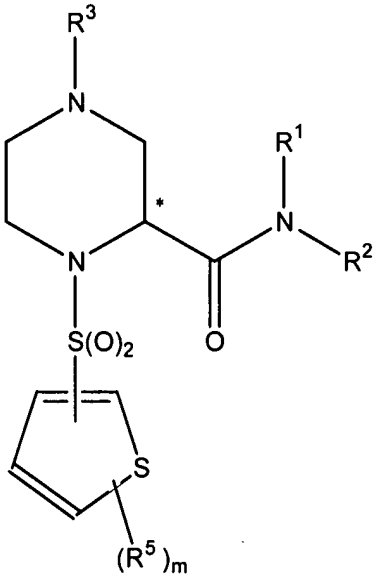
25. (Currently Amended) **The [[A]]** compound **of claim 23 ~~according to claims 23 or 24~~**, wherein R^4 is selected from C_1-C_6-alkyl, C_1-C_6-alkyl amino, aryl, heteroaryl, 3-8-membered cycloalkyl and heterocycloalkyl.

26. (Currently Amended) **The** [[A]] compound **of claim 23** ~~according to any one of claims 23 through 25~~, wherein R^2 is aryl; R^3 is selected from C_1-C_8-alkyl, C_1-C_8-acyl amino and C_1-C_8-alkyl acyl and R^4 is selected from C_1-C_6-alkyl, amino aryl and heteroaryl.

27. (Currently Amended) **The** [[A]] compound **of claim 23** ~~according to any one of claims 23 through 26~~, wherein R^2 is fused phenyl.

28. (Currently Amended) **The** [[A]] compound **of claim 23** ~~according to any one of claims 23 through 26~~, wherein R^4 is thienyl.

29. (Currently Amended) **The** [[A]] compound **of claim 23** ~~according to any one of claims 23 through 26~~having the following Formula II:



II

wherein R^1 and R^2 are independently selected from the group comprising or consisting of hydrogen, C_1-C_{12}-alkyl, C_2-C_{12}-alkenyl, C_2-C_{12}-alkynyl, wherein said alkyl, alkenyl, alkynyl chains may be interrupted by a heteroatom selected from N, O or S, aryl, heteroaryl, saturated or unsaturated 3-8-membered cycloalkyl, heterocycloalkyl, wherein said cycloalkyl, heterocycloalkyl, aryl or heteroaryl groups may be fused with 1-2 further cycloalkyl, heterocycloalkyl, aryl or heteroaryl group, an acyl moiety, C_1-C_{12}-alkyl aryl, C_1-C_{12}-alkyl heteroaryl, C_2-C_{12}-alkenyl aryl, C_2-C_{12}-alkenyl heteroaryl, C_2-C_{12}-alkynyl aryl, C_2-C_{12}-alkynyl

heteroaryl, C_1-C_{12}-alkyl cycloalkyl, C_1-C_{12}-alkyl heterocycloalkyl, C_2-C_{12}-alkenyl cycloalkyl, C_2-C_{12}-alkenyl heterocycloalkyl, C_2-C_{12}-alkynyl cycloalkyl, C_2-C_{12}-alkynyl heterocycloalkyl, alkoxycarbonyl, aminocarbonyl, C_1-C_{12}-alkyl carboxy, C_1-C_{12}-alkyl acyl, aryl acyl, heteroaryl acyl, C_3-C_8-(hetero)cycloalkyl acyl, C_1-C_{12}-alkyl acyloxy, C_1-C_{12}-alkyl alkoxy, C_1-C_{12}-alkyl alkoxycarbonyl, C_1-C_{12}-alkyl aminocarbonyl, C_1-C_{12}-alkyl acylamino, acylamino, C_1-C_{12}-alkyl ureido, C_1-C_{12}-alkyl carbamate, C_1-C_{12}-alkyl amino, C_1-C_{12}-alkyl ammonium, C_1-C_{12}-alkyl sulfonyloxy, C_1-C_{12}-alkyl sulfonyl, C_1-C_{12}-alkyl sulfinyl, C_1-C_{12}-alkyl sulfanyl, C_1-C_{12}-alkyl sulfonylamino, or C_1-C_{12}-alkyl aminosulfonyl;

R^3 is C_1-C_{16}-alkyl, C_2-C_{16}-alkenyl, C_2-C_{16}-alkynyl, wherein said alkyl, alkenyl, alkynyl chains may be interrupted by a heteroatom selected from N, O or S, aryl, heteroaryl, saturated or unsaturated 3-8-membered cycloalkyl, heterocycloalkyl, wherein said cycloalkyl, heterocycloalkyl, aryl or heteroaryl groups may be fused with 1-2 further cycloalkyl, heterocycloalkyl, aryl or heteroaryl group, an acyl moiety, C_1-C_{16}-alkyl aryl, C_1-C_{16}-alkyl heteroaryl, C_2-C_{16}-alkenyl aryl, C_2-C_{16}-alkenyl heteroaryl, C_2-C_{16}-alkynyl aryl, C_2-C_{16}-alkynyl heteroaryl, C_1-C_{16}-alkyl cycloalkyl, C_1-C_{16}-alkyl heterocycloalkyl, C_2-C_{16}-alkenyl cycloalkyl, C_2-C_{16}-alkenyl heterocycloalkyl, C_2-C_{16}-alkynyl cycloalkyl, C_2-C_{16}-alkynyl heterocycloalkyl, alkoxycarbonyl, aminocarbonyl, C_1-C_{16}-alkyl carboxy, C_1-C_{16}-alkyl acyl, aryl acyl, heteroaryl acyl, C_3-C_8-(hetero)cycloalkyl acyl, C_1-C_{16}-alkyl acyloxy, C_1-C_{16}-alkyl alkoxy, C_1-C_{16}-alkyl alkoxycarbonyl, C_1-C_{16}-alkyl aminocarbonyl, C_1-C_{16}-alkyl acylamino, acylamino, C_1-C_{16}-alkyl ureido, C_1-C_{16}-alkyl carbamate, C_1-C_{16}-alkyl amino, C_1-C_{16}-alkyl ammonium, C_1-C_{16}-alkyl sulfonyloxy, C_1-C_{16}-alkyl sulfonyl, C_1-C_{16}-alkyl sulfinyl, C_1-C_{16}-alkyl sulfanyl, C_1-C_{16}-alkyl sulfonylamino, or C_1-C_{16}-alkyl aminosulfonyl;

R^4 is C_1-C_{12}-alkyl, C_2-C_{12}-alkenyl, C_2-C_{12}-alkynyl, wherein said alkyl, alkenyl, alkynyl chains may be interrupted by a heteroatom selected from N, O or S, aryl, heteroaryl, saturated or unsaturated 3-8-membered cycloalkyl, heterocycloalkyl, wherein said cycloalkyl, heterocycloalkyl, aryl or heteroaryl groups may be fused with 1-2 further cycloalkyl, heterocycloalkyl, aryl or heteroaryl group;

R^5 is independently halogen, hydroxy or the same as defined for R^1; m is an integer of from 0 to 4; and pharmaceutically acceptable salts thereof.

30. (Currently Amended) **The** [[A]] compound of **claim 23** ~~**any of claims 23 to 29**~~ wherein R^2 comprises a carbazolyl, tetrahydro-beta-carbolinyl or a benzimidazolyl moiety.

31. (Currently Amended) **The** [[A]] compound ~~**according to any of the claims**~~ **of claim** 23 ~~**to 30**~~ that is selected from the following group:

4-hexyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridinyl-3-yl-1H-benzoimidazol-5-yl)-amide);

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)amide]-1-pentylamide;

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxylic acid 1-ethylamide 3-[(9-ethyl-9H-carbazol-3-yl)amide];

{[3-(9-ethyl-9H-carbazol-3-ylcarbamoyl)-4-(thiophene-2-sulfonyl)-piperazine-1-carbonyl]-amino}acetic acid ethyl ester;

4-pentanoyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (9-ethyl-9H-carbazol-3-yl) amide;

4-hexyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (9-ethyl-9H-carbazol-3-yl) amide;

4-dimethylsulfamoyl-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)amide] 1-pentylamide;

4-(1-methyl-1H-imidazole-4-sulfonyl)-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)-amide] 1-pentylamide;

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxyclic acid 1-pentylamide 3-[(3-pyridin-4-yl-phenyl)-amide];

4-(thiophene-2-sulfonyl)-piperzine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)-amide] 1-{[2-(1H-imidazol-4-yl)-ethyl]-amide};

4-hexyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-oxo-2,3,4,9-tetrahydro-1H-beta-carbolin-6-yl)-amide;

4-heptyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl)-amide;

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)-amide] 1-[(3-imidazol-1-yl-propyl)-amide]);

4-pentyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-oxo-2,3,4,9-tetrahydro-1H-beta-carbolin-6-yl)amide;

4-heptyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-oxo-2,3,4,9-tetrahydro-1H-beta-carbolin-6-yl)amide;

4-(3-methylsulfanyl-propyl)-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (9-ethyl-9H-carbazol-3-yl)-amide;

4-(4-ethyl-furan-3-ylmethyl)-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (9-ethyl-9H-carbazol-3-yl)-amide;

3-(9-ethyl-9H-carbazol-3-ylcarbamoyl)-4-(thiophene-2-sulfonyl)-piperazin-1-yl] acetic acid ethyl ester;

1-benzenesulfonyl-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

4-pentyl-1-thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

4-hexyl-1-thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

1-(4-fluoro-benzenesulfonyl)-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

1-(2-fluoro-benzenesulfonyl)-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

4-octyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-4-yl-1H-benzoimidazol-5-yl) amide;

4-heptyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-4-yl-1H-benzoimidazol-5-yl) amide;

1-dimethylsulfamoyl-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

1-(butane-1-sulfonyl)-4-hexyl-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide;

4-hexyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-4-yl-1H-benzoimidazol-5-yl) amide;

4-(3-methylsulfanyl-propyl)-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-4-yl-1H-benzoimidazol-5-yl) amide;

4-(thiophene-2-sulfonyl)-piperazine-1,3-dicarboxylic acid 3-[(9-ethyl-9H-carbazol-3-yl)-amide] 1-[(2-methoxy-ethyl)-amide];

4-octyl-1-(thiophene-2-sulfonyl)-piperazine-2-carboxylic acid (1-ethyl-2-pyridin-3-yl-1H-benzoimidazol-5-yl) amide.

32. (Currently Amended) **A pharmaceutical composition comprising the compound of claim 31.** ~~**A compound according to any one of claims 23 through 31 for use as a medicament**~~.

33. (Cancel)

34. (Currently Amended) A pharmaceutical composition comprising a pharmaceutically acceptable carrier and one or more compounds of **claim 31** ~~**any one of claims 1 through 31**~~.

35. (Original) A pharmaceutical composition of claim 34 wherein the compound is packaged together with instructions for use of the compound to treat infertility.